



## Department of Economics Course Outline

		<b>Term:</b>	Fall 2008
<b>Course:</b>	Economics 329 [Electricity Markets]	<b>Section:</b>	01
<b>Time:</b>	TR 18:00 – 19:15	<b>Place:</b>	ST 125 (subject to change)
<b>Instructor:</b>	Dr. M. C. Moore		
<b>Office:</b>	ES 602	<b>Telephone.:</b>	220-4386
<b>Office Hours:</b>	TBA	<b>E-mail:</b>	<a href="mailto:mcmoore@ucalgary.ca">mcmoore@ucalgary.ca</a>

### Textbook(s):

*Required:* *Electricity Deregulation*, Griffen and Puller, University of Chicago Press (2005).

*Required:* *Power System Economics*, Steven Stoft, Wiley-IEEE, (May 2002).

Additional readings will be available on Blackboard during term.

### Book(s) on Reserve:

None

### Blackboard:

This course will make use of Blackboard - students who are registered in this course can log on at <http://blackboard@ucalgary.ca/webapps/login>. Please note that Blackboard features a class e-mail list that I will use. It is your responsibility to ensure that Blackboard uses the e-mail address of your choice. The default is your University of Calgary e-mail address.

### Objective:

At the end of the course, the student should have acquired a fundamental knowledge of the operations and oversight of electricity markets, especially as they exist in North America. We will review the basic concept of electricity generation and transmission and examine generation technology including fossil-based generation and renewable energy. We will examine in depth the pricing and operation of electricity markets and will then turn to regulation and oversight on these markets with particular emphasis on the recent phenomena of electricity market deregulation. We will conclude with a discussion of the integration of electricity and other energy markets in North America and worldwide.

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**Course Outline:**

The course will consist of lectures and assigned readings with occasional guest lectures by specialists in this field. Grades will be based on class participation and performance in 3 quizzes, 1 of which will be unannounced, a mid-term and final examination.

**Course Topic Areas (sequential)**

## 1. Overview

Course grading, assignments, readings

## 2. Electricity - physical characteristics

Physics

Engineering

Technology, fuels and conversion

System characteristics

dispatchability

voltage

reliability

Capacity characteristics

## 3. Power Systems

Generation

types

efficiency

cost effectiveness

Transmission

lines

line loss and thermal limits

rights of way

pricing

Dispatch and Congestion Management  
4. Power System Economics (Microeconomics and pricing)

Marginal Cost Pricing

Efficiency, Perfect competition vs real market operations

Fixed and variable cost recovery+++

Demand curves (load)

Matching supply to demand

## 5. Electric Markets

Spot, Firm, Real Time

Reserves

Forward Markets (Hour ahead, Day ahead, Week ahead)

Hedging and Delivery

Settlement

Capacity and Installed Capacity Markets

6. Regulation and Oversight
  - The Role of the Regulator
    - Federal
    - Regional, State or Province
  - Market Power
    - Prediction
    - Monitoring
7. Deregulation and Competition
  - Underlying objectives
  - Theoretical applications
  - Practical experience
8. Review and Critique

### **Grade Determination and Final Examination Details:**

Grades will be assigned on the basis of 2 quizzes, a midterm and final examination.

Quiz grades total	20%
Midterm grade	40%
Final	40%

Tests and final exams are marked on a numerical (percentage) basis, then converted to letter grades. The course grade is then calculated using the weights indicated above. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	99 – 100	B	83 – 87	C-	64 – 67
A	92 – 98	B-	78 - 82	D+	60 – 63
A-	90 - 91	C+	74 - 77	D	55 – 59
B+	88 - 90	C	68 - 73	F	<55

If, for some reason, the distribution of grades determined using the aforementioned conversion chart appears to be abnormal the instructor reserves the right to change the grade conversion chart if the instructor, *at the instructor's discretion*, feels it is necessary to more fairly represent student achievement.

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

Non-programmable calculators will not be allowed during the writing of tests or final examinations.

There will be a Registrar scheduled final examination, lasting **2** hours and held in a classroom assigned by the Registrar.

Tests and exams will not involve multiple choice questions.

Students' Union Vice-President, Academic

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Society of Undergraduates in Economics (S.U.E.)

[www.ucalgary.ca/sue/](http://www.ucalgary.ca/sue/)

**Notes:**

- Students seeking reappraisal of a piece of graded term work (term paper, essay, etc.) should discuss their work with the Instructor *within fifteen* days of the work being returned to the class.
- It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Safewalk / Campus Security: 220-5333

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